

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.116 – EXPEDITED PROCEDURE

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Serial Number: 09/598,353

Filing Date: June 21, 2000

Title: STRUCTURES AND METHODS FOR ENHANCING CAPACITORS IN INTEGRATED CIRCUITS

REMARKS

This responds to the Office Action mailed on October 20, 2004.

Claims 1, 6, 11, 16, 21, 25, 51-54, 56, 58, 59, 61, and 63 are amended. Claims 1-25, and 51-63 remain pending in this application.

Applicant notes the indication on page 14 of the Office Action regarding the term “directly contact”. Applicant submits that previously presented claims 22, 23, and 24 recite the term “directly contacting”. Therefore, Applicant respectfully requests that the rejection of claims 22, 23, and 24 be reconsidered and that claims 22, 23, and 24 be allowed.

Applicant amends claims 1, 6, 11, 16, 21, 51-54, 56, 58, 59, 61, and 63 for clarity. These amendments are not made in response to any substantive rejection. Applicant also submits that claims 1, 6, 11, 16, 21, 51-54, 56, 58, 59, 61, and 63 are now in condition for allowance for reasons presented below.

Reservation of the Right to Swear Behind References

Applicant maintains the right to swear behind any references which are cited in a rejection under 35 U.S.C. §§102(a), 102(e), 103/102(a), and 103/102(e). Statements distinguishing the claimed subject matter over the cited references are not to be interpreted as admissions that the references are prior art.

§103 Rejection of the Claims

Claims 1, 3-6, 8, 9, 11, 13-16, 18, and 54 were rejected under 35 USC § 103(a) as being unpatentable over Kunitomo et al. (U.S. Patent No. 6,235,572) in view of Summerfelt et al. (U.S. Patent No. 5,622,893).

Independent claim 1 recites, among other things, “a single conductive layer directly contacting the metallization layer”. Applicant is unable to find in Kunimoto and Summerfelt et al. “a single conductive layer directly contacting the metallization layer”. Therefore, Applicant requests that the rejection of claim 1 and dependent claims 3-5 be reconsidered and withdrawn and that claims 1, and 3-5 be allowed.

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Independent claim 6 recites, among other things, "a single conductive layer directly contacting the metallization layer". Applicant is unable to find in Kunimoto and Summerfelt et al. "a single conductive layer directly contacting the metallization layer". Accordingly, Applicant requests that the rejection of claim 6 and dependent claims 8 and 9 be reconsidered and withdrawn and that claims 6, 8, and 9 be allowed.

Independent claim 11 recites, among other things, "a single conductive layer directly contacting the metallization layer". Applicant is unable to find in Kunimoto and Summerfelt et al. "a single conductive layer directly contacting the metallization layer". Therefore, Applicant requests that the rejection of claim 11 and dependent claims 13-15 be reconsidered and withdrawn and that claims 11, and 13-15 be allowed.

Independent claim 16 recites, among other things, "a single conductive layer directly contacting the metallization layer". Applicant is unable to find in Kunimoto and Summerfelt et al. "a single conductive layer directly contacting the metallization layer". Thus, Applicant requests that the rejection of claim 16 and dependent claim 18 be reconsidered and withdrawn and that claims 16 and 18 be allowed.

Independent claim 54 recites, among other things, "a first single conductive layer directly contacting the capacitor plug". Applicant is unable to find in Kunimoto and Summerfelt et al. "a first single conductive layer directly contacting the capacitor plug". Therefore, Applicant requests that the rejection of claim 54 be reconsidered and withdrawn and that claim 54 be allowed.

Claims 1-25, 54, and 55 were rejected under 35 USC § 103(a) as being unpatentable over Lin et al. (U.S. Patent No. 6,249,040) in view of Summerfelt et al.

Independent claim 1 recites, among other things, "a single conductive layer directly contacting the metallization layer". Applicant is unable to find in Lin and Summerfelt et al. "a single conductive layer directly contacting the metallization layer". Thus, Applicant requests that the rejection of claim 1 and dependent claims 2-5 be reconsidered and withdrawn and that claims 1-5 be allowed.

Independent claim 6 recites, among other things, "a single conductive layer directly contacting the metallization layer". Applicant is unable to find in Lin and Summerfelt et al. "a single conductive layer directly contacting the metallization layer". Therefore, Applicant

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requests that the rejection of claim 6 and dependent claims 7-10 be reconsidered and withdrawn and that claims 6-10 be allowed.

Independent claim 11 recites, among other things, “a single conductive layer directly contacting the metallization layer”. Applicant is unable to find in Lin and Summerfelt et al. “a single conductive layer directly contacting the metallization layer”. Therefore, Applicant requests that the rejection of claim 11 and dependent claims 12-15 be reconsidered and withdrawn and that claims 11-15 be allowed.

Independent claim 16 recites, among other things, “a single conductive layer directly contacting the metallization layer”. Applicant is unable to find in Lin and Summerfelt et al. “a single conductive layer directly contacting the metallization layer”. Thus, Applicant requests that the rejection of claim 16 and dependent claims 17-20 be reconsidered and withdrawn and that claims 16-20 be allowed.

Independent claim 21 recites, among other things, “first single electrode directly contacting the conductive plug”. Applicant is unable to find in Lin and Summerfelt et al. “first single electrode directly contacting the conductive plug”. Accordingly, Applicant requests that the rejection of claim 21 be reconsidered and withdrawn and that claim 21 be allowed.

Independent claim 22 recites, among other things, “a first single electrode directly contacting the conductive plug”. Applicant is unable to find in Lin and Summerfelt et al. “a first single electrode directly contacting the conductive plug”. Hence, Applicant requests that the rejection of claim 22 be reconsidered and withdrawn and that claim 22 be allowed.

Independent claim 23 recites, among other things, “a first single electrode directly contacting the conductive plug”. Applicant is unable to find in Lin and Summerfelt et al. “a first single electrode directly contacting the conductive plug”. Therefore, Applicant requests that the rejection of claim 23 be reconsidered and withdrawn and that claim 23 be allowed.

Independent claim 24 recites, among other things, “a first single electrode directly contacting the conductive plug”. Applicant is unable to find in Lin and Summerfelt et al. “a first single electrode directly contacting the conductive plug”. Thus, Applicant requests that the rejection of claim 24 be reconsidered and withdrawn and that claim 24 be allowed.

Independent claim 25 recites, among other things, “a first electrode having a substance that is selected from a group consisting of TiN, TiON, WN_x, TaN, Ta, Pt-Rh, Pt-RhO_x, Ru,

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RuO_x, Ir, IrO_x, Pt-Ru, Pt-RuO_x, Pt-Ir, Pt-IrO_x, SrRuO₃, Au, Pd, Al, Mo, Ag, and Poly-Si”.

Applicant is unable to find in Lin and Summerfelt et al. “a first electrode having a substance that is selected from a group consisting of TiN, TiON, WN_x, TaN, Ta, Pt-Rh, Pt-RhO_x, Ru, RuO_x, Ir, IrO_x, Pt-Ru, Pt-RuO_x, Pt-Ir, Pt-IrO_x, SrRuO₃, Au, Pd, Al, Mo, Ag, and Poly-Si”. Thus, Applicant requests that the rejection of claim 25 be reconsidered and withdrawn and that claim 25 be allowed.

Independent claim 54 recites, among other things, “a first single conductive layer directly contacting the capacitor plug”. Applicant is unable to find in Lin and Summerfelt et al. “a first single conductive layer directly contacting the capacitor plug”. Therefore, Applicant requests that the rejection of claim 54 and dependent claim 55 be reconsidered and withdrawn and that claims 54 and 55 be allowed.

Claim 51 was rejected under 35 USC § 103(a) as being unpatentable over Kunitomo et al. in view of Summerfelt et al., and further in view of Kotecki et al. (U.S. Patent No. 6,262,450).

Independent claim 51 recites, among other things, “a single conductive layer directly contacting the metallization layer”. Applicant is unable to find in Kunitomo, Summerfelt et al., and Kotecki et al. “a single conductive layer directly contacting the metallization layer”. Thus, Applicant requests that the rejection of claim 51 be reconsidered and withdrawn and that claim 51 be allowed.

Claims 52 and 53 were rejected under 35 USC § 103(a) as being unpatentable over Cloud et al. (U.S. Patent No. 5,815,427) in view of Kunitomo et al. and Summerfelt et al.

Independent claim 52 recites, among other things, “a single conductive layer directly contacting the metallization layer”. Applicant is unable to find in Cloud et al., Kunitomo, and Summerfelt et al. “a single conductive layer directly contacting the metallization layer”. Thus, Applicant requests that the rejection of claim 52 be reconsidered and withdrawn and that claim 52 be allowed.

Independent claim 53 recites, among other things, “a single conductive layer directly contacting the metallization layer”. Applicant is unable to find in Cloud et al., Kunitomo, and Summerfelt et al. “a single conductive layer directly contacting the metallization layer”. Thus,

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Applicant requests that the rejection of claim 53 be reconsidered and withdrawn and that claim 53 be allowed.

Claims 56-58 were rejected under 35 USC § 103(a) as being unpatentable over Lin et al. in view of Summerfelt et al., and further in view of Matsubara et al. (U.S. Patent No. 6,306,699).

Independent claim 56 recites, among other things, “a first single conductive layer directly contacting the capacitor plug”. Applicant is unable to find in Lin, Summerfelt et al., and Matsubara et al. “a first single conductive layer directly contacting the capacitor plug”. Thus, Applicant requests that the rejection of claim 56 and dependent claim 57 be reconsidered and withdrawn and that claims 56 and 57 be allowed.

Independent claim 58 recites, among other things, “a first conductive layer directly contacting the capacitor plug”. Applicant is unable to find in Lin, Summerfelt et al., and Matsubara et al. “a first conductive layer directly contacting the capacitor plug”. Therefore, Applicant requests that the rejection of claim 58 be reconsidered and withdrawn and that claim 58 be allowed.

Claims 59 and 60 were rejected under 35 USC § 103(a) as being unpatentable over Lin et al. in view of Summerfelt et al., and further in view of Shimazu et al. (U.S. Patent No. 6,686,274).

Independent claim 59 recites, among other things, “a first single conductive layer directly contacting the single capacitor plug”. Applicant is unable to find in Lin, Summerfelt et al., and Shimazu et al. “a first single conductive layer directly contacting the single capacitor plug”. Therefore, Applicant requests that the rejection of claim 59 and dependent claim 60 be reconsidered and withdrawn and that claims 59 and 60 be allowed.

Claims 61-63 were rejected under 35 USC § 103(a) as being unpatentable over Lin et al. in view of Summerfelt et al., Matsubara et al., and further in view of Shimazu et al.

Independent claim 61 recites, among other things, “a first single conductive layer directly contacting the single capacitor plug”. Applicant is unable to find in Lin, Summerfelt et al., Matsubara et al., and Shimazu et al. “a first single conductive layer directly contacting the single capacitor plug”. Accordingly, Applicant requests that the rejection of claim 61 and dependent claim 62 be reconsidered and withdrawn and that claims 61 and 62 be allowed.

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Independent claim 63 recites, among other things, “a single conductive layer directly contacting the capacitor plug”. Applicant is unable to find in Lin, Summerfelt et al., Matsubara et al., and Shimazu et al. “a single conductive layer directly contacting the capacitor plug”. Accordingly, Applicant requests that the rejection of claim 63 be reconsidered and withdrawn and that claim 63 be allowed.

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CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's representative (612) 373-6969 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.


Respectfully submitted,

CEM BASCERI ET AL.

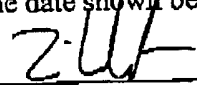
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